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10/060,549	01/30/2002	Eric Gregory Oettinger	TI-33551	1761

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/060,549	OETTINGER ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) *1-20 and 39-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,29,30,37,38,46 and 47* is/are rejected.

7)☒ Claim(s) *22-28 and 31-36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election **without** traverse of Species 3 in the reply filed on 16 March 2006 is acknowledged. Applicant stated that claims 21-47 read on Species 3, shown in the table look-up technique in Figs. 8c-8d. However, Examiner respectfully disagrees. In particular, notice the limitations of claims 39 and 45 that regard the use of a set of coefficients. Although coefficients are employed in Species 1 (808 in Fig. 8a) and Species 2 (834 in Fig. 8b), Species 3 uses a look-up table (892 in Fig. 8d). Accordingly, **claims 39 (and claims 40-44 dependent thereon) and 45 are withdrawn** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention(s), there being no allowable generic or linking claim. Also, as claims 1-20 are non-elected, **claims 1-20 are also withdrawn**. Conversely, Examiner considers the merits of **claims 21-38 and 46-47** in this Office Action.

Claim Objections

2. **Claim 28** is objected to because of the following informalities:

In claim 28, "wherein the second prespecified pattern is pattern is scaled" is used where "wherein the second prespecified pattern is scaled" may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Pavelchek

4. **Claims 37-38 and 46-47** are rejected under 35 U.S.C. 102(e) as being anticipated by Pavelchek (U.S. Patent Application Publication No. US 2005/0276608 A1).

Regarding claim 37, Pavelchek discloses:

A method for maintaining an aligned light beam in an optical wireless network comprising:

at a source optical wireless unit (e.g., Node 1 in Fig. 11):

receiving positional data (e.g., pointing data from Node 2 in step 1110 or 1115, rx measurement from Node 2) from a destination optical wireless unit; and

adjusting the position of the light beam if needed (e.g., paragraph [104]);

at the destination optical wireless unit (e.g., Node 2 in Fig. 11):

polling a set of optical detectors (e.g., quadrant detectors in paragraph [0055]) for positional data (e.g., rx measurement corresponds to the position of received beam); and

transmitting the positional data (e.g., rx measurement sent to Node 1 in step 1115) to the source optical wireless unit.

Regarding claim 38, Pavelchek discloses:

The method of claim 37, wherein the method executes at a prespecified regularity (note that the steps in Fig. 11 are iterative).

Regarding claim 46, Pavelchek discloses:

The method of claim 37, wherein the method executes during normal operation of the optical wireless network (e.g., tracking is performed during normal data exchange in paragraph [102]).

Regarding claim 47, Pavelchek discloses:

The method of claim 37, wherein the positional data is transmitted along side normal communications traffic (e.g., as tracking is performed during normal data exchange in paragraph [102], this implies that the positional data of the tracking method is transmitted with, or along side, the normal data exchange).

Oettinger et al. '472

5. **Claims 37-38 and 46-47** are rejected under 35 U.S.C. 102(e) as being anticipated by Oettinger et al. '472 (U.S. Patent Application Publication No. US 2002/0097472 A1, hereinafter "Oettinger472") with reference to Christiansen et al. (U.S. Patent Application Publication No. US 2002/0181055 A1, hereinafter "Christiansen", note that paragraph [0029] of Oettinger472 incorporates Christiansen by reference to the application number of Christiansen, 09/923,510).

Regarding claim 37, Oettinger472 discloses:

A method for maintaining an aligned light beam in an optical wireless network comprising:

at a source optical wireless unit (e.g., OWL 110 in Fig. 1):

receiving positional data from a destination optical wireless unit (e.g., detected alignment information from OWL 115 in paragraph [0028]); and

adjusting the position of the light beam if needed (e.g., beam is controllably steered in paragraph [0028]);

at the destination optical wireless unit (e.g., OWL 115 in Fig. 1):

polling a set of optical detectors for positional data (e.g., Fig. 3); and

transmitting the positional data (e.g., OWL 115 transmits detected alignment information in paragraph [0028]) to the source optical wireless unit.

Regarding claim 38, Oettinger472 discloses:

The method of claim 37, wherein the method executes at a prespecified regularity (periodic alignment in paragraph [0038]).

Regarding claim 46, Oettinger472 discloses:

The method of claim 37, wherein the method executes during normal operation of the optical wireless network (e.g., Figs. 5a-5c show the normal alignment process).

Regarding claim 47, Oettinger472 discloses:

The method of claim 37, wherein the positional data is transmitted along side normal communications traffic (Christiansen, control packets 45 along side data packets 48 in Fig. 4b).

Oettinger et al. '435

6. **Claims 37-38 and 46-47** are rejected under 35 U.S.C. 102(e) as being anticipated by Oettinger et al. '435 (U.S. Patent Application Publication No. US 2003/0043435 A1, hereinafter "Oettinger435").

Regarding claim 37, Oettinger435 discloses:

A method for maintaining an aligned light beam in an optical wireless network comprising:

at a source optical wireless unit (e.g., OWL 4 in Fig. 1):

receiving positional data from a destination optical wireless unit (e.g., detected alignment information from OWL 6 in paragraph [0033]); and

adjusting the position of the light beam if needed (e.g., beam is controllably steered in paragraph [0033]);

at the destination optical wireless unit (e.g., OWL 6 in Fig. 1):

polling a set of optical detectors for positional data (e.g., detectors in paragraph [0060]); and

transmitting the positional data (e.g., OWL 6 transmits detected alignment information in paragraph [0033]) to the source optical wireless unit.

Regarding claim 38, Oettinger435 discloses:

The method of claim 37, wherein the method executes at a prespecified regularity (periodic transmission of alignment information in paragraph [0038]).

Regarding claim 46, Oettinger435 discloses:

The method of claim 37, wherein the method executes during normal operation of the optical wireless network (i.e., the alignment process is a normal function of the network, paragraph [0033]).

Regarding claim 47, Oettinger435 discloses:

The method of claim 37, wherein the positional data is transmitted along side normal communications traffic (control packets are inserted along side data packets in paragraph [0040]).

Christiansen et al.

7. **Claims 37-38 and 46-47** are rejected under 35 U.S.C. 102(e) as being anticipated by Christiansen.

Regarding claim 37, Christiansen discloses:

A method for maintaining an aligned light beam in an optical wireless network comprising:

at a source optical wireless unit (e.g., OWL 4 in Fig. 1):

receiving positional data from a destination optical wireless unit (e.g., detected alignment information from OWL 6 in paragraph [0033]); and

adjusting the position of the light beam if needed (e.g., beam is controllably steered in paragraph [0033]);

at the destination optical wireless unit (e.g., OWL 6 in Fig. 1):

polling a set of optical detectors for positional data (e.g., Figs. 7a-7b); and

transmitting the positional data (e.g., OWL 6 transmits detected alignment information in paragraph [0033]) to the source optical wireless unit.

Regarding claim 38, Christiansen discloses:

The method of claim 37, wherein the method executes at a prespecified regularity (note regular appearance of control packets 45 in Fig. 4b and paragraph [0040]).

Regarding claim 46, Christiansen discloses:

The method of claim 37, wherein the method executes during normal operation of the optical wireless network (e.g., paragraph [0040] discusses the alignment process during normal communication).

Regarding claim 47, Christiansen discloses:

The method of claim 37, wherein the positional data is transmitted along side normal communications traffic (control packets 45 along side data packets 48 in Fig. 4b).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Cheng et al.

10. **Claims 21, 29-30, 37-38, and 46-47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng.

Regarding claim 21, Cheng discloses a method comprising:

at a first optical wireless unit:

moving a light beam in a first prespecified pattern (col. 5, l. 58-60, scanning routine);

receiving detector range data from the second optical wireless unit (col. 9, l. 42-67 discuss pairings of received intensity at the detector with particular alignment locations, which would provide a profile of the detector range; this range data is received at transmitting terminal 40, col. 9, l. 61-67); and

moving the light beam in a second prespecified pattern (e.g., col. 6, l. 4-6, the scanning routine is repeated; e.g., calibration in col. 10, l. 1-17):

at a second wireless unit:

determining detector range (col. 9, l. 42-67 discuss pairings of received intensity at the detector with particular alignment locations, which would provide a profile of the detector range);

transmitting the detector range (this range data is transmitted to transmitting terminal 40, col. 9, l. 61-67);

determining reference positions (e.g., grid of Fig. 5 employed for the second unit's own transmitter; e.g., calibration positions in col. 10, l. 1-17).

Cheng does not expressly disclose:

at the second wireless unit:

generating a table of detector readings.

However, Cheng does disclose 2-D receptor arrays 58 and 82. The readings from these detectors are conventionally entered into a table(s) generated to index the positions of the individual receptors with the respective readings.

Regarding claim 29, Cheng discloses:

The method of claim 21, wherein the light beam pauses (col. 10, l. 1-17, the calibration process moves a light beam to offset positions, implying a pause at each offset position) at each reference position as it follows the second prespecified pattern, the generating step comprising:

polling the optical detectors for data as the light beam pauses (detection of data by detection array 58 in col. 10, l. 6-11); and

saving the polled data (processor 84 collects this data in col. 10, l. 12-17, which implies storage/saving of this data in some register or location).

Regarding claim 30, Cheng does not expressly disclose:

The method of claim 29, wherein the second optical wireless unit polls the optical detectors for data *a plurality of times* as the light beam pauses and *computes an average of the data.*

However, Cheng does disclose taking measurements a plurality of times and computing an average of the resultant data (col. 14, l. 8-14) for the scanning process. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to also employ this polling step for the calibration process of Cheng. One of ordinary skill in the art would have been motivated to do this to average out the effects of rapid jitter and measurement noise (col. 14, l. 11-14).

Regarding claim 37, Cheng discloses:

A method for maintaining an aligned light beam in an optical wireless network comprising:

at a source optical wireless unit (e.g., one terminal 40 in Fig. 2):

receiving positional data (e.g., col. 9, l. 61-64) from a destination optical wireless unit; and

adjusting the position of the light beam if needed (e.g., col. 9, l. 64-67);

at the destination optical wireless unit (e.g., another instance of terminal 40 in Fig. 2):

polling an optical detector (e.g., intensity measurement module 100 in Fig. 3) for positional data (col. 9, l. 42-67); and

transmitting the positional data (col. 9, l. 61-64) to the source optical wireless unit.

Cheng does not expressly disclose:

polling *a set of optical detectors*.

However, the use of one detector or a set of detectors is an obvious variant in the art for producing the same result. That is, the "one" optical detector (Cheng, intensity measurement module 100 in Fig. 3) of Cheng develops a representation of the intensity of the input optical signal. However, notice that another "one" optical detector of Cheng (90 in Fig. 3) is taught to generally include one *or more* detectors to develop a representation of the intensity of the input optical signal. The generality of such a practice suggests that the limitation of polling *a set of optical detectors* is an obvious variant.

Regarding claim 38, Cheng discloses:

The method of claim 37, wherein the method executes at a prespecified regularity (e.g., "periodically" in col. 14, l. 29-32).

Regarding claim 46, Cheng discloses:

The method of claim 37, wherein the method executes during normal operation of the optical wireless network (e.g., "on-the-fly" in col. 4, l. 55 – col. 5, l. 9).

Regarding claim 47, Cheng discloses:

The method of claim 37, wherein the positional data is transmitted along side normal communications traffic (e.g., "on-the-fly" in col. 4, l. 55 – col. 5, l. 9).

11. **Claims 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng as applied to claim 21 above, and further in view of Poon et al. (U.S. Patent No. 6,469,815 B1, hereinafter "Poon").

Regarding claim 28, Cheng does not expressly disclose:

The method of claim 21, wherein the second prespecified pattern is scaled according to the received detector range data.

However, notice that such scaling is known in the art, as exemplified by the reduced scan fields of view in Figs. 10-12 of Poon. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to provide such scaling to reduce the uncertainty area in an acquisition process (e.g., col. 8, l. 11-26). Such reduction in uncertainty area leads to precise acquisition of the desired target.

Allowable Subject Matter

12. **Claims 22-28 and 31-36** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Grant et al. is cited to show the reduction of the cone of uncertainty when trying to acquire a target (col. 7, l. 6-16). Wissinger is cited to show the use of fields of view with different range sizes (Fig. 1). Shelby is cited to show the improvement of a detection array (Fig. 2B) in comparison with quadrant detectors (Fig. 1B). Lunscher is cited to show the use of a detection array with readings that could be indexed by a table (Fig. 2). Javitt et al. is cited to show another method of calibrating stations for free-space optical communications. Adams et al. is cited to show the use of a look-up table for alignment purposes (col. 6, l. 30-42). Meier is cited to show the use of a look-up table in calibration methods (Fig. 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER